Agricultural Pesticides: Tracing and Transformations, Dr. Renata Raina-Fulton, University of Regina, Department of Chemistry & Biochemistry, phone: 306-585-4012; e-mail: renata.raina@uregina.ca

Studies on atmospheric sampling of pesticides initially included two agricultural regions in western Canada - Lower Fraser Valley (LFV) (site at Abbotsford, BC in the 2004- 2006, restarted in area in 2011) and the Canadian prairies (site at Bratt's Lake, SK near Regina since 2003 –two co-located samplers here). The current project has received funding from Natural Science and Engineering Council (NSERC) over 5 years (starting April 2011) for studies on agricultural pesticides and degradation products in the atmosphere. The first priority for the next phase of the research is to address specific research gaps from previous studies as they were limited by only having resources for the two sites and also focused on developing the analytical methods capable of reaching low pg/m^3 (most of our method detection limits are 0.1-1 pg/m^3 and worst case generally around 10 pg/m^3 for more difficult compounds).

The objectives of the new research included temporal and spatial studies with a broader scope of pesticides analyzed to allow for characterization of regional contributions in more detail as well as the potential for long-range atmospheric transport. With new pesticides added we are also still looking for their occurrence; for those we have data for we are examining their seasonal and annual trends more along with shifts in climate, crop production changes, etc). Within this there is also an objective to assess gas/particle partitioning and the role of PM2.5 particularly for agricultural regions in the Pacific Northwest. In the LFV sampling has taken place at Chilliwack, Abbotsford, and Clearbrook (in close proximity to Abbotsford site). In 2013 the sampling at Clearbrook will stop and I am looking for a new site currently possibly closer to Langley (Metro Vancouver already assists us with the sampling at Chilliwack and Abbotsford). In the Okanagan Valley we began sampling in 2011 at Osoyoos (BC MoE/Canada customs border site), Summerland (Agriculture and Agri-Food Research Centre), and Oliver (between Osoyoos and Summerland –water quality site for Environment Canada). In 2012 the first site was added in the United States in Omak, WA (See map of sites/samplers in Long Beach Presentation). A site in North Dakota was also added in 2012 in collaboration with University of North Dakota for the studies in the prairies. Some previous results are shown in the Long Beach presentations as examples as well as more recent results from the Osoyoos border site. A book

chapter has just been submitted for lindane and pre-emergent herbicide work in the prairies and I am working on getting the Osoyoos results into a publication.

I am interested in potential sites in the United States in the Pacific Northwest and ideally to have these added in 2013 for the agricultural season but can extend to 2014 or 2015. We would need assistance with the sample changes. All of the existing sites use high-volume samplers (require power) typically with in-kind assistance from the various agencies for changing the sampling head (which we ship pre-loaded) with sampling on a 1 or 2 week basis (pending schedules for staff at sites). Generally a sample change take 10-15 minutes and we try to minimize requirements at the sites (basically unload existing sampling head and reload a new one along with recording times, and parameter related to air flow). I visit several times for maintenance, exchange of sampling materials, calibration, and any training or holiday coverage that is needed. I would be interested in other sites which we could install a high-volume air sampler or passive sampler (if personnel or power is an issue) – passive sampler would likely be a once or twice a season sample change. Most of our funds are spend on sampling materials, sampler supplies, shipping, analytical lab materials, and some for student stipends. If you have interest or have done previous sampling at some sites let me know. Proposed list of some of target pesticides is also attached as an excel file.